IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:

Le Trong NGUYEN

Appl. No. To Be Assigned

(Continuation of Appl. No. 09/852,293; Filed: May 10, 2001)

Filed: Herewith

For:

High-Performance, Superscalar-Based Computer System With Out-Of Order

Instruction Execution

Confirmation No. To Be Assigned

Art Unit: To Be Assigned

Examiner: To Be Assigned

Atty. Docket: SP015.C15

(1397.028000F)

Information Disclosure Statement

Commissioner for Patents PO Box 1450 Alexandria, VA 22313-1450

Sir:

Listed on accompanying Form PTO-1449 are documents that may be considered material to the examination of this application, in compliance with the duty of disclosure requirements of 37 C.F.R. §§ 1.56, 1.97 and 1.98.

Where the publication date of a listed document does not provide a month of publication, the year of publication of the listed document is sufficiently earlier than the effective U.S. filing date and any foreign priority date so that the month of publication is not in issue. Applicants have listed publication dates on the attached PTO-1449 based on information presently available to the undersigned. However, the listed publication dates should not be construed as an admission that the information was actually published on the date indicated.

Applicants reserve the right to establish the patentability of the claimed invention over any of the information provided herewith, and/or to prove that this information may not

be prior art, and/or to prove that this information may not be enabling for the teachings purportedly offered.

This statement should not be construed as a representation that a search has been made, or that information more material to the examination of the present patent application does not exist. The Examiner is specifically requested not to rely solely on the material submitted herewith.

Applicants have checked the appropriate boxes below.

- □ 1. Statement under 37 C.F.R. 1.704(d). Each item of information contained in this Information Disclosure Statement was cited in a communication from a foreign patent office in a counterpart application and this communication was not received by any individual designated in 37 C.F.R. § 1.56(c) more than thirty days prior to the filing of this information disclosure statement.
- □ 3. Filing under 37 C.F.R. § 1.97(c). This Information Disclosure Statement is being filed more than three months after the U.S. filing date AND after the mailing date of the first Office Action on the merits, but before the mailing date of a Final Rejection, or Notice of Allowance, or an action that otherwise closes prosecution in the application.

- □ a. Statement under 37 C.F.R. § 1.97(e)(1). I hereby state that each item of information contained in this Information Disclosure Statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this Information Disclosure Statement. 37 C.F.R. § 1.97(e)(1).
- □ b. Statement under 37 C.F.R. § 1.97(e)(2). I hereby state that no item of information in this Information Disclosure Statement was cited in a communication from a foreign patent office in a counterpart foreign application and, to my knowledge after making reasonable inquiry, was known to any individual designated in 37 C.F.R. § 1.56(c) more than three months prior to the filing of this Information Disclosure Statement. 37 C.F.R. § 1.97(e)(2).
- □ c. Attached is our PTO-2038 Credit Card Payment Form [OR] Check No.

 ______ in the amount of \$ ______ in payment of the fee under 37

 C.F.R. § 1.17(p).
- □ 4. Filing under 37 C.F.R. § 1.97(d) This Information Disclosure Statement is being filed more than three months after the U.S. filing date and after the mailing date of a Final Rejection or Notice of Allowance, but before payment of the Issue Fee. Attached is our PTO-2038 Credit Card Payment Form [OR]

 Check No. ______ in the amount of \$ _____ in payment of the fee under 37 C.F.R. § 1.17(p); in addition:
 - □ a. Statement under 37 C.F.R. § 1.97(e)(1). I hereby state that each item of information contained in this Information Disclosure Statement was cited in a communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this Information Disclosure Statement. 37 C.F.R. § 1.97(e)(1).
 - □ b. Statement under 37 C.F.R. § 1.97(e)(2). I hereby state that no item of information in this Information Disclosure Statement was cited in a

communication from a foreign patent office in a counterpart foreign application and, to my knowledge after making reasonable inquiry, was known to any individual designated in 37 C.F.R. § 1.56(c) more than three months prior to the filing of this Information Disclosure Statement. 37 C.F.R. § 1.97(e)(2).

- □ 5. The document(s) was/were cited in a search report by a foreign patent office in a counterpart foreign application. Submission of an English language version of the search report that indicates the degree of relevance found by the foreign office is provided in satisfaction of the requirement for a concise explanation of relevance. 1138 OG 37, 38.
- ☐ 6. A concise explanation of the relevance of the non-English language document(s) appears below:
- Zopies of the documents were cited by or submitted to the Office in an IDS that complies with 37 C.F.R. § 1.98(a)-(c) in Application No. 09/852,293, filed May 10, 2001, which is relied upon for an earlier filing date under 35 U.S.C. § 120. Thus, copies of these documents are not attached. 37 C.F.R. § 1.98(d).

It is respectfully requested that the Examiner initial and return a copy of the enclosed PTO-1449, and indicate in the official file wrapper of this patent application that the documents have been considered.

The U.S. Patent and Trademark Office is hereby authorized to charge any fee deficiency, or credit any overpayment, to our Deposit Account No. 19-0036.

Respectfully submitted,

STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C.

Thomas C. Fiala

Attorney for Applicants Registration No. 43,610

Date: 9/12/03

1100 New York Avenue, N.W. Washington, D.C. 20005-3934 (202) 371-2600 SKGF_DC1:177390.1

ATTY. DOCKET NO. APPLICATION NO. SP015.C15 To Be Assigned FORM PTO-1449 APPLICANT Nguyen et al. INFORMATION DISCLOSURE STATEMENT FILING DATE GROUP Herewith To be assigned U.S. PATENT DOCUMENTS EXAMINER INITIAL DOCUMENT DATE NAME CLASS SUB-FILING DATE NUMBER CLASS AA1 3,346,851 10/1967 Thornton et al. 02/1973 AB1 3,718,912 Hasbrouck et al. AC1 3,771,138 11/1973 Celtruda et al. 01/1974 AD1 3,789,365 Jen et al. AE1 4,034,349 07/1977 Monaco et al. 04/1980 Hughes et al. AF1 4,200,927 AG1 4,228,495 10/1980 Bernhard et al. AH1 4,296,470 10/1981 Fairchild et al. AI1 4,315,314 02/1982 Russo 10/1983 Kawakami AJ1 4,410,939 Puhl AK1 4,434,461 02/1984 FOREIGN PATENT DOCUMENTS EXAMINER DOCUMENT DATE COUNTRY CLASS SUB-TRANSLATION INITIAL CLASS NUMBER 0 479 390 A2 08/1992 EΡ Yes AL1 No 0 426 393 08/1991 EΡ Yes AM1 No 0 419 105 A2 10/1990 EP Yes AN1 No 0 402 856 12/1990 ΕP Yes A01 No 0 377 991 A3 12/1989 ΕP Yes AP1 No OTHER (Including Author, Title, Date, Pertinent Pages, etc.) 8-Bit Embedded controller Handbook, Intel, 1989, pp. 1-1- 1-19 and 3-1 -3-37. AR 1 Acosta, Raymond D. et al., "An Instruction Issuing Approach to Enhancing AS Performance in Multiple Functional Unit Processors," IEEE Transactions on 1 Computers, Vol. C-35, No. 9, September 1986, pp. 815-828. Agerwala et al., "High Performance Reduced Instruction Set Processors," IBM ΑT 1 Research Division, March 31, 1987, pp. 1-61. EXAMINER DATE CONSIDERED

Page 2 of 28

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_	AA3	4,89	7,810	01/1990	Nix			
	AB3	4,90	1,228	02/1990	Kodama			
•	AC3	4,90	1,233	02/1990	Liptay			
	AD3	4,90	3,196	02/1990	Pomerene et al.			
	AE3	4,92	4,376	05/1990	Ooi			
	AF3	4,92	6,323	05/1990	Baror et al.			
	AG3	4,94	2,525	07/1990	Shintani et al.			
	АН3	4,98	5,825	01/1991	Webb, Jr. et al.			
	AI3	4,99	2,938	02/1991	Cocke et al.			
	AJ3	5,00	3,462	03/1991	Blaner et al.			
	AK3	5,10	1,341	03/1992	Circella et al.			
				FOREIG	N PATENT DOCUMENTS			
EXAMINER INITIAL		DOCU	MENT ER	DATE	COUNTRY	CLASS	SUB- CLASS	TRANSLATION
	AL3	2 57	5 564	12/1985	FR			Ye N
	АМЗ	2 01	1 682	11/1979	GB			Ye N
	AN3	61-9	5447	06/1986	JP			Ye N
	A03	2-27	8337	11/1990	JP			Ye N
	AP3	3-13	7729	06/1991	JP			Ye: N
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	AR	<u>3</u>	Proceedin	gs of the 2 nd :	N Architecture for a Trace S International Conference on and Operating Systems, Octob	Architect	ural Supp	ort for
	AS	<u>3</u>	Foster et al., "Percolation of Code to Enhance Parallel Dispatching and Execution," IEEE Trans. On Computers, December 1971, pp. 1411-1415.					and
	AT	3	Goodman, Basic Blo	J.R. and Hsu, cks," ACM, 198	W., "Code Scheduling and Ro 88, pp. 442-452.	egister Al	location	in Large
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Page 4 of 28

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Page 5 of 28

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communication to Applicant.

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INFORMATION DISCLOSURE STATEMENT

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EXAMINER INITIAL		DOCU NUME	JMENT BER	DATE	NAME	CLASS	SUB- CLASS	FILING DATE
	AA6	5,76	8,575	06/1998	McFarland et al.			
	AB6	5,77	78,210	07/1998	Henstrom et al.			
	AC6	5,79	97,025	08/1998	Popescu et al.			
	AD6	5,83	32,205	11/1998	Kelly et al.			
	AE6	5,83	32,293	11/1998	Popescu <i>et al</i> .			
	AF6	5,96	51,629	10/1999	Nguyen et al.			
	AG6	6,03	38,654	03/2000	Nguyen et al.			<u></u>
	AH6	6,09	92,181	07/2000	Nguyen et al.			
	AI6	6,10	01,594	08/2000	Nguyen et al.			<u> </u>
	AJ6	6,12	28,723	10/2000	Nguyen et al.			
	AK6	5,23	33,694	08/1993	Hotta et al.			
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	AL6							Yes No
	AM6							Yes No
	AN6							Yes No
	A06							Yes No
	AP6							Yes No
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	AR	<u>6</u>		unctionality,	High Performance Restricted " Proceedings from ISCA-13,			
	AS	<u>6</u>		Hwu et al., "Checkpoint Repair for High-Performance Out-of-Order Execution Machines," IEEE Trans. On Computers, Vol. C-36, NO. 12, December 1987, pp. 1496 1514.				
	AT	<u>6</u>	Compiler	Code Generato	ng Parallel Microprocessor Nor," Proceedings of the 15 th 38, pp. 45-53.	Microarchi Annual Sy	tectures v	vith a n Computer
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	AR	7	IBM Journa	al of Research	n and Development, Vol. 34,	No. 1, Jai	nuary 1990	, pp. 1-70.
	AS	7	IBM Technical Disclosure Bulletin, Overlap of Store Multiple Operation With Succeeding Operations through Second Set of General Purpose Registers, Voll 28, No. 6, November 1989, New York, NY, pp. 2727-2728.					
	AT	7	Jelemensky, New Microcomputer Features Advanced Hardware For Real-Time Control Applications, Electro Conference Record, Vol. 14, April 11, 1989, Los Angeles, CA, pp. 511-519.					
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	AL8							Yes No	
	AM8							Yes No	
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	AR	<u>8</u>	Johnson, V 1989, 134	Villiam M., Su pages.	per-Scalar Processor Design	ı, (Dissert	tation), c	opyright	
	AS	<u>8</u>	Johnson, V	Johnson, William M., Super-Scalar Processor Design, Prentice-Hall, Inc., 1991 (i its entirety).					
	AT	<u>8</u>	Jouppi, N. IEEE, 1989	Jouppi, N.H., "Integration and Packaging Plateaus of Processor Performance," IEEE, 1989, pp. 229-232.					
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	AR	<u>9</u>	Parallelis	sm and Its Eff	uniform Distribution of Inst fect on Performance," IEEE 1 889, pp. 1645-1658.			
	AS	<u>9</u>	Jouppi et al., "Available Instruction-Level Parallelism for Superscalar an Superpipelined Machines," Proceedings of the 3 rd International Conference of Architectural Support for Programming Languages and Operating Systems, Apr 1989, pp. 272-282.					ence on
	АТ	<u>9</u>		eller, R.M., "Look-Ahead Processors," Computing Surveys, Vol. 7, No. 4, De 975, pp. 177-195.				
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	AR	<u>10</u>	Lam M.S. "Instruction Scheduling For Superscalar Architectures " Appu Per					
	AS	<u>10</u>	Lee, Ruby	Lee, Ruby B., "Precision Architecture," COMPUTER, January 1989, pp. 78-91.				
	AT	<u>10</u>	Melear, C. 9, No. 2,	, Motorola, I April 1989, L	inc., The Design of the 8800 os Alamitos, CA, pp. 26-38	00 RISC Fa	mily, IEEE	E MICRO, Vol.
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	AL11							Yes No
	AM11							Yes No
	AN11							Yes No
	A011							Yes No
	AP11							Yes No
	1	<u></u>	OTHER (Inc.)	luding Author.	Title, Date, Pertinent Pag	es, etc.)		
	AR	11	Murakami,	K. et al., "S	SIMP (Single Instruction Strigh-Speed Single-Processor i	ream/Multi	ple Instru re," ACM,	action 1989, pp.
	AS	11	Workstati	Odnert, D. et al., "Architecture and Compiler Enhancements for PA-RISC Workstations," Proceedings from IEEE Compcon, February 25-March 1, 1991, San Francisco, CA, pp. 214-218.				
	AT 11 Patent Abstracts of Japan, Vol. 010, No. 089, April 1986, & JP, A, 60 225 943 (Hitachi Seisakusho K K) November 11, 1985.) 225 943	
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	AN12							Yes No
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								Yes
	AP12							No
		(OTHER (Incl	uding Author,	Title, Date, Pertinent Pag	es, etc.)		
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	AS	<u>12</u>	Patt et a. Proceeding 103-108.	Patt et $al.$, "HPS, A New Microarchitecture: Rationale and Introduction," Proceedings of the $18^{ m th}$ Annual Workshop on Microprogramming, December 1985, pp. 103-108.				
	АТ	12	Processors	Pleszkun et al., "The Performance Potential of Multiple Functional Unit Processors," Proceedings of the 15 th Annual Symposium on Computer Architecture, June 1988, pp. 37-44.				
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	AL13								Yes No
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	AM13			_					No.
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	A013	1							Yes
	AP13	1							Yes
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	AS	<u>13</u>	Popescu et al., The Metaflow Architecture, Metaflow Technologies, Inc., June 1991(in its entirety).						
	AT 13 S. McGeady, "The i960A Superscalar Implementation of the 80960 Architecture," IEEE, 1990, pp. 232-240.						tecture,"		
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EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next

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	AL15							Yes No
	AM15							Yes No
	AN15							Yes No
	A015							Yes No
	AP15		<u>.</u>					Yes No
			OTHER (Inc.	luding Author,	, Title, Date, Pertinent Pa	ges, etc.)		
	AR	<u>15</u>	Smith, M.1 Processor	D. et al., "Bo ," IEEE, 1990	oosting Beyond Static Sche , pp. 344-354.	duling in a	Supersca:	lar
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	AL16							Yes No
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	AM16							No
	AN16							Yes No
	A016		<u> </u>					Yes No
								Yes
	AP16			<u> </u>			I	No
	T		OTHER (Inc.	luding Author,	Title, Date, Pertinent Pag	res, etc.)		
	AR 16 Tjaden et al., "Detection and Parallel Execution of Independent Instructions," IEEE Trans. On Computers, Vol. C-19, No. 10, October 1970, pp. 889-895.						ructions," 95.	
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	AL17							Yes No
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			JIHER (INC.	uding Author,	litte, bate, Pertinent Pag	es, etc.,		
	AR 17 Tomasulo, R.M., "An Efficient Algorithm for Exploiting Multiple Arithmetic Units," IBM Journal, Vol. 11, January 1967, pp. 25-33.						umetic	
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	AL18	1,0112						Yes No
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	AM18							No
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	A018			1				Yes No
	AP18							Yes No
	•		OTHER (Inc.)	luding Author,	Title, Date, Pertinent Pag	es, etc.)		
	AR	<u>18</u>		, Third-Genera	ation RISC Processors, On Sp	•	ort, March	n 30, 1992,
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	AT	18		English Language Translation of Japanese Patent Appl. No. 61-95447, published May 14, 1986, 15 pages.				
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	AR	<u>19</u>	English L November	anguage Trans 14, 1990, 20	lation of Japanese pages.	Patent Ap	opl. No.	2-278337,	published
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	AL20							Yes No
	AM20							Yes No
	AN20							Yes No
	A020	<u> </u>						Yes No
	AP20							Yes No
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	AR	<u>20</u>	based on t Architectu	the SIMP (Sing	formance Evaluation of the le Instruction Stream/Mult sciplinary Graduate School	iple Instr	uction Pip	eline)
	AS	20	Superscala Stream/Mu	ar Processor " ltiple Instruc	ation, Kuga Morio et al., SIMP" based on the SIMP (S tion Pipeline) Architectur cciences, Kyushu University	ingle Inst: e," Interd:	ruction isciplinar	ry Graduate
	АТ	20	Processor Graduate	ga Morihiro et al., "Low-Level Parallel Processing Algorithm for the SIMP ocessor Prototype," Department of Information Systems, Interdisciplinary aduate School of Engineering Sciences, Kyushu University, Vol. 30, No. 12,				
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	AL21							Yes No
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	AM21							No Yes
	AN21					 		No
	A021							Yes No
	AP21							Yes No
		(THER (Incl	uding Author,	Title, Date, Pertinent Pag	es, etc.)		
	AR	<u>21</u>	Processing Systems, I	Algorithm fo Interdisciplin	ation, Kuga Morihiro et al. or the SIMP Processor Protot ary Graduate School of Engi o. 12, Dec. 1989, pp. 1603-1	ype," Depa	artment of ciences, K	Information yushu
	AS	<u>21</u>	US Applica	ation 09/336,5	89, Senter Cheryl et al., J	une 21, 19	999.	
	AT	21	Colwell et al., "A VLIW Architecture for a Trace Scheduling Compiler," Proceedings of the 2 nd International Conference on Architectural Support for Programming Languages and Operating Systems, October 5-8, 1987, California.					
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	AL22							Yes No
	AM22							Yes No
	AM22							Yes
	AN22	ļ						No
	A022							Yes No
	AP22							
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	AR	22	Notificat: 145123, ma	ion of Reason ailed June 26,	for Refusal for Japanese Pa 2002, 2 pages.	tent Appl:	ication No	. 2000-
	AS	<u>22</u>	Notificat: 145124, ma	ion of Reason ailed June 26,	for Refusal for Japanese Pa 2002, 2 pages.	tent Appl:	ication No	. 2000-
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Page 23 of 28

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	AM23							Yes No
	AN23							Ye: No
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APPLICANT Nguyen et al.	
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	AL25							Yes No	
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	AN25							Yes No	
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	AM28							<u> </u>	Yes No	
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